1872.

ROATH LOCAL BOARD OF HEALTH.

THE

OFFICER OF HEALTH'S REPORT

ON

Sanitary Condition of Roath,

DURING THE YEAR 1872.

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ROATH LOCAL BOARD OF HEALTH.

Cardiff, April 1, 1873.

To the Chairman and Members of the Roath Local Board of Health.

Gentlemen,

I lay before you to-day my Report on the Sanitary Condition of the District of the Roath Local Board of Health.

This District comprises an area of 700 acres. It is bounded on the West by that of the Borough of Cardiff, iu a liue drawn from the Great Western Railway through Adamsdown, Meteor-street, Castle-road, and Crwysbychan-road, to the Crwys farm; on the north by the Fair Oak-road to the Roath brook; on the East by the Roath brook to the Great Western Railway; and on the south by the Great Western Railway.

It will be observed that this District does not include the whole of the Parish of Roath—namely, those portions to the east of the Roath brook, and south of the Great Western Railway. When the District was formed those parts were simply agricultural, thinly populated, and little important in a sanitary aspect whether they were included or not; but now that the extension of building points directly to the eastern suburbs of Cardiff, and in fact has already commenced, a considerable portion of the land south of the Great Western Railway will soon partake of an urban character, while the contemplated erection of extensive manufactories, with all the adjuncts to such depôts of labour, must exercise material influence on the sanitary condition of the whole of the inhabitants of the immediate neighbourhood. These facts present themselves for your serious consideration, as to whether the entire parish should not come under your jurisdiction, and prevent the anomaly of two separate authorities existing in the same parish, and thereby ensure uniformity of action.

As far as its geology is concerned, it may be sufficient to state that the whole of that portion of Roath between the Newport-road and the Great Western Railway consists of sandy sharp gravel, overlying a bed of strong gravel with marl about 16 feet thick below the surface; that portion to the north of the Newport-road being a strong clayey gravel. Its subsoil, therefore, is favourable to the percolation of surface water.

The drainage of the urban portion, as far as it has been carried out is good; but the rapidity with which streets have been formed and built, has neces-

sarily made it a matter of extreme difficulty to keep pace with its requirements. The system of drainage adopted may be described as follows: The streets on the western side of the district—namely, Clive-street, Milton-street, Shakespeare-street, Vere-street, Oxford-street, the whole of Castle-road, and about 100 yards of the Newport-road, covering an area of 15 acres, are drained into the Cardiff Sewers. These are flushed from a tank at the summit of this part of the district, fed from the brook on the north end of Castle-road in winter, and from the Water Works main in summer. This, combined with a rapid fall, keeps them in good condition, the sewers being deep enough to drain all the cellars and underground floors. The remaining and largest sewers are drained into an outfall sewer, which discharges itself into the sea on the Splott-moors about a mile to the east of Cardiff, and the same distance from the boundary of the district. The sewers of this portion are flushed partially from a tank in Milton-street, and partly from tanks constructed at the upper ends of the respective sewers, with water supplied by the Water Works Company. These sewers have good gradients, and are of a size sufficiently large to admit personal inspection, with the exception of some streets in the southern part of the district—namely, Eclipse-street, Comet-street, Planet-street, System-street, Platinum-street, and Zinc-street; also some in the central part—viz., Wordsworth-street, Southey-street, Dryden-street, Partridge-road, and Oakfield-street. The sewers in these streets being of small dimensions are inaccessible; they are, however, in moderate working order, with the exception of that in Partridge-road, in which such obstruction exists as to require immediate attention.

These drains are all fitted with ventillating shafts placed in the middle of the streets, and the foul air being passed through layers of charcoal is deprived of its offensive gases.

Since the construction of the sewers the level of the subsoil water has been gradually lowered, resulting in an imperceptible but effectual drying of the air, and very appreciable purification of the atmosphere.

A sunk reservoir is constructed at the sea outfall for the reception of storm waters and any unusual flow in the sewers during the high water of spring tides, when the ontfall doors are closed. This reservoir prevents the accumulation of back water in the sewers, and the consequent forcing of foul air through the ventilators in the upper part of the district. At neap tides the outfall is always free.

Of the undrained parts of the district, John-street and Helen-street are now being drained, by which the oft-recurring nuisances will be effectually abated. The remaining portions—those in the St. James' district, consisting of James-street, Charles-street, Rose-street, Lily-street, and Clive-place—have been only recently built, and are not provided with any description of drainage. There are about 150 houses occupied in this locality, and although the nature of the subsoil is such as to permit the percolation of surface water and impurities, thus mitigating to some degree the evils likely to arise from the present absence of drainage, still it is essentially necessary your attention

should be directed to this urgent want before the hot weather sets in. Other undrained parts of the district, north of the Merthyr-road and east of Oakfield-street, including Spring-gardens and the village of Roath, cannot be reached by the present system of sewers. Special attention should therefore be paid to the sanitary arrangements of the houses, to their water closets, and the imperfect nature of the surface gullies in proximity to them. I may instance the houses recently built near the Crwys gate, which have cesspools for closet drainage ; but surface drainage and house impurities are discharged into an open ditch on the western side of the road. Opposite to these houses, in hot weather, the contents become stagnant, are very offensive, and cause frequent complaints. The occupiers of the hamlet of houses situated at the junction of the Penylan and Merthyr-road are exposed to the excitants of zymotic disease to a serious degree. The cottages formerly used as a workhouse have their closet accommodation at the northern end of the gardens opposite the houses ; the ordure falls into an open ditch passing along the western side of the gardens, to and abutting the pine ends of the houses. Having no further outlet, the contents become stagnant, converting the ditch int oan open elongated cesspool, which is at all times offensive, and in summer weather seriously so. This should be remedied without delay. Close to these houses, on the western side of the Penylan-road, there exists an open drain, in which all the surface water and house impurities are received. When visited a few days back this was very offensive. The ditch near the houses and highway should be covered.

The condition of the premises belonging to a cottage situated in a field at the eastern side of this road and the junction of the Penylan and Merthyr-roads is such as render the honses unfit and dangerous for occupation. There exists no closet accommodation ; the absence of any provision for surface drainage, with its low level, precludes any natural means of exit for the soakings from the pigstyes, the overflowings from the ill-constructed open cesspool, and the abominations which exist there to a most serious degree.

The Spring-garden cottages have cesspools, but no provision for surface drainage and house impurities. This matter is discharged by ill-constructed sewers into an open ditch on the northern side of Green-lane, immediately opposite to the dwelling-houses ; after this it passes by a covered channel inside the turnpike road, when it again becomes an open ditch, continuing its course for some distance contiguous to the public path ; afterwards discharging itself into the adjoining fields.

The meadows lying between the Merthyr-road and the Roath brook, north of Roath Church, are during a wet season little better than a swamp, owing to obstructions in the lower part of the brook, and general neglect in not keeping the banks properly trimmed and the watercourse clear. The injurious effects of fogs and miasma from this cause must be experienced throughout the whole of the adjacent lands, and the cold vapour must produce its deleterious influence on the Penylan side of the valley, as well as on the western side. If combined action could be taken between yonr Board and the parish autho-

rities, and proper aid given by the owners of lands adjoining the brook, considerable improvement might, I apprehend, be made without serious outlay. I need hardly impress on your attention that excessive retention of moisture in the soil during the winter months, to be rapidly evaporated in the warm days of early spring, is highly conducive to pulmonary disease.

The water supply is abundant and good. It is furnished on the constant principle to the whole of the urban parts of the district, at a cost of 5 per cent. on all the rentals exceeding £20, and 6 per cent. on the rentals below that sum, by the Cardiff Water Works Company. An analysis has recently been made, which is as follows :

Carbonate of lime	11·54
,, magnesia	2·17
Sulphate of magnesia	1·10
Chloride of magnesium	0·77
,, sodum	0·60
Combustible matter	0·60
Nitric acid	A trace
Ammonia	0·02
	16·80 grains to the gallon.

This water is obtained by the company from the monntain springs of the Lisvane Hills, distant five or six miles from Roath. At the base of these hills the Company has constructed large reservoirs capable of storing 100,000,000 gallons of water. On leaving the reservoirs, the water has to pass through extensive filter beds, and it is afterwards transparent, void of taste or smell, and well aerated.

In the outlying districts the houses are supplied thns—Those near the Crwys gate obtain pump water from a well sunk in the sand below the gravel ; the tenants speak of it as being good and never failing. The houses at the junction of the Merthyr and Penylan-roads obtain their potable water from a shallow natural well or reservoir on the northern side of the Merthyr-road. The well is supplied by springs, is never dry, and is conveniently accessible to the whole of the houses in this locality. The water necessary for other domestic purposes can be obtained from the water conrses which exist abundantly here. The cottages near the church obtain water from a pump belonging to the neighbouring farm. The Spring-garden houses are supplied by well-water obtained from the gravel subsoil, which is porous, and consequently permits surfaco water to percolate through it. The imperfect provision for drainage already described as existing in this locality, endangers the quality of this water, especially if more houses should be erected there ; although during the percolation the suspended matter may be retained, organic and other impurities in a state of solution will pass through. This fact is made clear by Dr. Parkes, who states in his work on Hygeine "that shallow wells are apt to be contaminated by floods carrying in surface impnrities ; and by sewage soaking from cesspits, and matters of all kinds thrown out on the ground. To

a certain extent the soil through which those substances pass will filter and purify the water, but it must eventually lose this power, and also, at last a complete channel may be opened, and a stream of substance may suddenly find its way into a well. A well drains an extent of ground around it in the shape of an inverted cone, which is in proportion to its own depth and looseness of the soil; in very loose soils a well 60 or 80ft. will drain a large area, perhaps as much as 200ft. in diameter, or even more, but the exact amount is not precisely determined."

The main of the Water Works Company is now carried on to Pengam, sufficiently near to be accessible to these houses, if it is deemed necessary to supply them from that source. The house accommodation is adequate to the requirements of the district, and has kept pace with the growing population.

According to the censuses of 1851, 1861, and 1871, the number of houses occupied, were respectively as follow :—

Year.	Number of Inhabited houses.	Average number of occupants to each house.
1851	63	6·2
1861	525	5·7
1871	1213	6·5

In 1873 the number of inhabited houses has increased to 1559, the average number of inmates to each house on the estimated population being 5·5; there are also 86 houses void or in course of construction. The houses consist of a large number of villas, the streets chiefly of tenements of a good description for mechanics and labourers, which are lofty, well-ventilated, and have areas behind, used as gardens; at the end of the gardens, and at a distance from the house, closet accommodation is provided.

The streets are wide and kept clean. The scavenging and removing of nuisances are performed under contract, by which all premises should be cleared three times a week, and I have reason to believe this is fairly done. The watering of the streets is also done under an annual contract to the extent necessary during dry weather.

I have very carefully examined the Report Book of your Inspector of Nuisances, Sergeant King. I find he reported during the year 127 nuisances as existing in houses or in their backlets. These nuisances chiefly occurred in John-street, where 26 houses were reported as in an improper state; in Milton-street, 27; and in Shakespeare-street, 13. The other nuisances reported consisted of isolated cases throughout the district. He had occasion to report nuisances recurring a second time in 24 instances, a third time in two instances, and a fourth time in one instance. He notifies that the several complaints were properly attended to. The subjects for complaint were the improper state of water closets, stagnant water, and accumulations of house refuse, an absence of surface drainage, and keeping animals on the premises.

During my inspection, I had reason to consider he discharged his duty efficiently, and that his reports fairly represent the state of the district; it is therefore satisfactory to find that only on one occasion had the Inspector found

it necessary to report a house as being over-crowded. I do not believe that this evil exists to any great extent in the Roath district.

The rainfall of 1872 was unprecedentedly heavy and continuous. The total was a third above the average, and the number of wet days exceeded any previous record in this neighbourhood. Electrical disturbances were very frequent. The temperature was generally high, but the summer heat by day was much diminished by the constant moisture and prevalence of clouds. Floods were wide-spread and disastrous.

The rainfall in this district during five successive years ending 1871 was as follows :—

1867	37·02
1868	39·77
1869	40·85
1870	35·60
1871	41·16

In 1872, the rainfall rose to 56·28 inches, and was distributed over the year as below :—

January	7·51
February	4·65
March	3·57
April	1·99
May	2·18
June	3·96
July	5·53
August	4·13
September	4·30
October	5·76
November	5·13
December	7·57
Total	56·28 inches.

Having thus alluded to the various collateral circumstances necessary to be considered when estimating the sanitary condition of a locality, I may now call your attention to those which more particularly bear upon the subject—namely, the Population, its rate of increase, its Births, and its Deaths.

The population of Roath has within the last few years increased with an almost unprecedent rapidity—this may be recognized by a reference to the censuses for 1851, 1861, and 1871.

Census.	Population.
1851	312
1861	3044
1871	7986

It may now be estimated at 8500.

The Births registered during the year 1872 were 404, being at the rate of 47·52 per 1000 population.

The deaths registered during the same period were 164, of these, 89 were

males, and 75 females. The death-rate being 19·29 per 1000. The mean annual death-rate of England during the decennial period ended 1870, beiug 22·76 per 1000. The district, therefore, contrasts most favourably, whether estimated by the large excess of Births over Deaths, or by the low death-rate compared with that ruling the Kingdom. The deaths at age took place as under :

Under one year			48
Above One year, and under Two years			26
Two ,,	Three		4
Three ,,	Four		8
Four ,,	Five		5
Five ,,	Ten		8
Ten ,,	Fifteen		7
Fifteen ,,	Twenty-five		11
Twenty-five ,,	Thirty-five		12
Thirty-five ,,	Forty-five		9
Forty-five ,,	Fifty-five		7
Fifty-five ,,	Sixty-five		9
Sixty-five ,,	Seventy-five		5
Seventy-five ,,	Eighty-five		4
Eighty-five ,,	Ninety-five		1
			164

According to the above analysis, the infantile rate of mortality in this district contrasts very favourably with that ruling the kingdom. During the year 1872 the mortality of children under one year of age in the whole of England was at the rate of 13·7 per cent. of the births ; in Roath this was 11·8.

Mr. Simon, Medical Officer of Health to the Privy Council, in a report made to that Board, states "that the death rates of young children are among the most important studies in sanitary science. In the first place, their tender young lives, as compared with the more hardened and acclimatised lives of the adult population, furnish a very sensitive test of sanitary circumstances ; so that differences of infantile death-rate are, under certain qualifications, the best proof of differences of household condition in any number of compared districts. And secondly, those places where infants are most apt to die are necessarily the places whose survivors are most apt to be sickly ; and where, if they struggle through a scrofulous childhood to realise an abortive puberty, they beget a still sicklier brood than themselves, even less capable of labour, and even less susceptible of education."

It cannot be too distinctly recoguised that a high local mortality of children must almost necessarily denote a high local prevalence of those causes which determine a degeneration of race.

The registered causes of Death are shown by the subjoined table. I also illustrate the mortality produced by each disease in this district, as compared

with the mean annual mortality from the like cause throughout the Kingdom during the decennial period alluded to.

	DISEASES.	Deaths.		Rate of mortality to 1000 living.	Mean annual rate of mortality to 1,000 living in all England.
Sporadic Diseases, known Seat.	Convulsions	9		1·058	1·261
	Diseases of Brain...	2		0·235	0·253
	Apoplexy	3		0·352	0·481
	Paralysis	2		0·235	0·499
		—	16		
	Phthisis	22		2·588	2·729
	Bronchitis	10		1·176	1·748
	Inflammation of Lungs	11		1·294	1·136
		—	43		
	Disease of Heart		8	0 941	0·973
	Disease of Stomach	1		0·117	0·013
	,, Liver	3		0·352	0·025
	,, Bowels	4		0·470	0·281
	,, Kidney	1		0·001	0·021
		—	9		
Zymotic Diseases.	Fever Contd. and Typ. ...	4		0·470	0·890
	,, Puerperal	2		0·235	0·111
	Measles	16		1·882	0·465
	Smallpox	10		1·176	0·169
	Hooping Cough	2		0·235	0·529
	Croup	5		0·588	0·255
	Diarrhœa	17		2·000	0·871
		—	56		
Sporadic Diseases Unknown Seat.	Phlegmon	2		0·235	0·023
	Strunea	2		0·235	0·014
	Cancer	4		0·470	0·314
	Atrophy, Deb. and Mesentery ...	14		1·647	1·447
	Teething	2		0·235	0·224
		—	24		
	Age	4	4	0·470	1·352
	Inquest	4	4	0·470	0·746
	All Causes		164	19·29	22·76

By the above table it will be seen that the rate of mortality has been less in this district than throughout the Kingdom with few exceptions. The chief of these exceptions being smallpox and diarrhœa—these epidemics prevailed extensively throughout the Kingdom in 1872, but did not occur to any extent during the decennial period included in the table.

The total cases of smallpox reported in the Roath district during the epidemic were 60. These occurred in the following streets :—

Adamsdown cottages	1
Clifton-street	4
Clive-street	3
Constellation-street	1
Comet-street	4
Croft-street	1
Elm-street	3

Green-lane	1
Island cottages	1
Ivor-strcet	3
John-street...	15
Milton-street	1
Planet-street	3
Shakespeare-street	4
Woodcock-street	6
Zinc-street	2
System-street	6
Newport-road	1
	—60

Of these the following terminated fatally :—1 in June, a female, aged 14, residing in Milton-street; July 18, a female, aged 15, in Green-lane; the same day, a male, aged 21, in Oxford-street; August 8, a male, aged 11, in John-street; August 18, a male, aged 27, in Clifton-street; August 24, a female, aged 8, in John-street; August 27, a male, aged 6, in Zinc-street; October 27, a male, aged 28, in Clive-street; December 8, a male, aged 31, in System-street; and August 25, a male, aged 28, in Constellation-street. The total Deaths from smallpox were 10. It is satisfactory to know that only in 7 houses a secoud case occurred. The houses were thoroughly disenfected under the supervision of Sergeant King, and every means taken to prevent the spread of the epidemic. Revaccination was adopted in all infected houses with great success; and primary vaccination carried out very efficiently by the public vaccinator.

The deaths from diarrhœa were chiefly infantile.

I have now brought before your notice all matters which may be considered interesting to your Board in a sanitary point of view; with the hope that in pointing out the various localities where excitant or predisposing causes of disease exist in your district, you may be enabled to apply such powers as you possess to remove these, and maintain your present low rate of mortality.

I have the honour to be,

Gentlemen,

Your obedient Servant,

H. J. PAINE, M.D.